DOCUMENT RESUME

ED 447 107 SP 039 586

AUTHOR	Mertler, Craig A.
TITLE	An Alternative Classification Scheme for Teaching Performance Incentives Using a Factor Analytic Approach.
PUB DATE	2000-10-28
NOTE	21p.; Paper presented at the Annual Meeting of the Mid-Western Educational Research Association (Chicago, IL, October 25-28, 2000).
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Awards; *Compensation (Remuneration); Elementary Secondary Education; Faculty Development; *Incentives; Motivation Techniques; Positive Reinforcement; Praise; Professional Recognition; Recognition (Achievement); *Rewards; Self Motivation; *Teacher Motivation; Teachers

ABSTRACT

This study attempted to (1) expand the dichotomous classification scheme typically used by educators and researchers to describe teaching incentives and (2) offer administrators and teachers an alternative framework within which to develop incentive systems. Elementary, middle, and high school teachers in Ohio rated 10 commonly instituted teaching incentives for teaching performance with respect to level of motivation offered by each. Incentives included: a one-time monetary award; being selected as the district's teacher of the year; receiving funds to attend an instructional workshop; having students thank them for helping them understand a difficult concept; participating in teacher projects; getting early retirement/contract buy-out; observing vast improvement in student achievement levels since the beginning of the year; being awarded a plaque by students; and being permitted to purchase additional classroom equipment and supplies. A factor analytic approach determined the resulting factor structure underlying teachers' ratings. This resulted in a four-factor model, which the paper discusses as an alternative to the dichotomous classification scheme. The conceptual labels attached to the four categories of teaching incentives are student-centered rewards, professional development incentives, school district recognition awards, and financial compensation. (Contains 20 references.) (SM)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 447 107

AN ALTERNATIVE CLASSIFICATION SCHEME FOR TEACHING PERFORMANCE INCENTIVES USING A FACTOR ANALYTIC APPROACH

Craig A. Mertler, Ph.D.

Educational Foundations & Inquiry Program

School of Educational Leadership & Policy Studies

College of Education & Human Development

Bowling Green State University

Bowling Green, OH 43403

mertler@bgnet.bgsu.edu

Paper presented at the annual meeting of the

Mid-Western Educational Research Association, Chicago, IL (Oct. 25-28, 2000)

Running head: TEACHING PERFORMANCE INCENTIVES...

SP039586

BEST COPY AVAILABLE

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

C. A. Mertler

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Abstract

This study attempted to expand the dichotomous classification scheme, typically used by educators—as well as researchers—to describe teaching incentives, and offer administrators and teachers an alternative "framework" within which to develop incentive systems. Elementary, middle, and high school teachers were asked to rate ten commonly instituted teaching incentives with respect to the level of motivation offered by each. A factor analytic approach was used to determine the resulting factor structure which underlied the teachers' ratings. The analysis resulted in a four-factor model and is discussed as an alternative to the dichotomous classification scheme. The conceptual labels attached to the four categories of teaching incentives are *student-centered rewards*, *professional development incentives*, *school district recognition awards*, and *financial compensation*.

An Alternative Classification Scheme for Teaching Performance Incentives Using A Factor Analytic Approach

Introduction

Generally speaking, a significant number of teachers are dissatisfied with the circumstances associated with their work, and have been for some time. A study conducted by the National Education Association revealed that 25% of the teachers responding to the study expressed dissatisfaction with their current jobs (Sweeney, 1981). Similarly, but more recently, Mertler (1992) reported that 23% of the elementary, middle, and high school teachers surveyed in his study were dissatisfied with their jobs. Furthermore, 34% of the teachers in that study reported that, if given the opportunity to choose a career again, they would not choose to enter the teaching profession. In a national survey of 1000 inservice teachers, 67 percent responded that they know teachers whom they believe are incompetent and should be fired. When asked to specify the number of teachers who should be fired, the average response was three (Turner, 1986). These findings and additional research seem to indicate that there exists a motivation problem in the teaching profession. It is likely that many of these teachers are not incapable of performing well. Perhaps it is the case that many are *unwilling* to perform well; i.e., they are unmotivated.

Competent teaching professionals are being lost to a variety of other career fields. In addition, many teachers who have remained in the classroom have become indifferent toward the work they are charged to perform. Unfortunately, the individuals most effected by this crisis are their students. These students are being deprived of the opportunity to learn from a high proportion of these teachers who have the potential to be competent and successful.

A critical problem facing the teaching profession today is a lack of career incentives sufficient to retain the most talented teachers (Johns, 1988). Additionally, the status of the profession could be enhanced by the implementation of job incentive and reward systems. This would make teaching a more attractive profession (Oliver et al., 1988).

With a few minor variations, the literature has typically and consistently categorized incentives of teaching performance into a simple dichotomy – intrinsic and extrinsic rewards. This study is an attempt to expand this dichotomous classification scheme and offer administrators and teachers an alternative "framework" within which to develop incentive systems.

Background

The task of developing a system of professional incentives for teachers presents quite a challenge. Creating a plan that is acceptable to teachers, administrators, and to the community *and* that improves teaching in the classroom is difficult (Palaich & Flannelly, 1984). In a large-scale investigation into teacher satisfaction, Dinham and

Scott's (1997) results supported those of previous studies (Martinez-Pons, 1990; Fox, 1986; Ellis, 1984; Palaich & Flannelly, 1984; Lortie, 1975; Chapman, 1983; Galloway et al., 1985) which concluded that teachers are most satisfied by matters intrinsic to the role of teaching, and most dissatisfied by those extrinsic to teaching. Ozcan (1996), following his review of literature, stated that "It can be safely stated that intrinsic rewards are important to teachers and the opportunities to earn intrinsic rewards motivate them. ... the greater the opportunities to earn intrinsic rewards, the greater will be teacher motivation" (p. 28). However, the intrinsic rewards of teaching have been on the decline (Oliver et al., 1988).

As a variation of this dichotomous classification scheme, Lortie (1975) identified three forms of rewards received by teachers. "Ancillary" rewards are those which attract individuals to the profession, but have little affect on the daily classroom performance (e.g., summer vacation). "Extrinsic" rewards are those tied to the organization and independent of the individual (e.g., salary and fringe benefits). "Intrinsic" rewards consist of those that are received internally. Although structured differently, Dinham and Scott (1997) also identified a third category of incentives. This third category—school-based factors—consists of elements such as school leadership, school climate, and school infrastructure. Although teachers can be motivated by all three types of rewards, many incentive systems operate under the false assumption that teachers can be motivated *primarily* by extrinsic rewards (Johnson, 1986). Employees have two levels of needs and both motivation factors (i.e., those associated with the work itself that allow an individual to achieve psychological growth) and hygiene

factors (i.e., those associated with the work environment that an individual pursues in order to avoid unpleasantness or prevent job dissatisfaction) have the capability to meet those needs (Frataccia & Hennington, 1982). However, only motivation factors (analogous to intrinsic rewards) provide the motivating force which may lead to improved performance (Herzberg, Mausner, & Snyderman, 1959). Most extrinsically-oriented incentive systems are unable to fulfill even the fourth level of Maslow's hierarchy (needs that address esteem of others and self-respect). Incentive systems should be developed and implemented in order to meet teachers' higher order needs, such as recognition and praise (Fox, 1986; Oliver et al., 1988).

In his extensive review of literature on teacher motivation, Ozcan (1996) argued that in modern society, the importance of extrinsic rewards should not be overlooked. He continues by stating that teachers do not leave the profession due to a lack of intrinsic rewards, but rather because of the lack of satisfactory extrinsic ones. However, he also cites studies spanning more than 20 years in which teachers consistently stated that economically-based rewards are not important to them. Teachers throughout these studies revealed that they receive the greatest amount of gratification when they feel that they have influenced their students.

Additionally, Ozcan (1996) acknowledged that there are no "pure" categories in which to classify professional rewards, and that the extrinsic/intrinsic classification scheme is used simply to facilitate analysis and discussion. As a catalyst behind the study at hand, it was the contention of the researcher that the terms "intrinsic" and "extrinsic" possess innate positive and negative connotations, respectively. That is,

intrinsic rewards are realized in the form of *internal satisfaction* as a result of performing the work itself; i.e., they are "good." On the other hand, extrinsic rewards are those realized by receiving something *tangible and substantial* for your efforts; i.e., they are "bad." Therefore, it was the goal of this research study to arrive at an *empirically-based* classification system for teaching performance incentives.

Purpose of the Study

This study was an attempt to determine the underlying factors or constructs which might account for the main sources of variability in 10 observable, measurable variables taken from a larger study of teacher motivation and job satisfaction. These underlying factors are not directly observable or measurable by the researcher. In order to discover the underlying latent factors, the data were subjected to a factor analytic procedure.

Method

The data for this study were originally collected for a larger study which investigated aspects of teacher motivation and job satisfaction. Surveys were administered to 128 elementary, middle, and high school teachers in the state of Ohio. One section of the original survey asked teachers to rate ten commonly used incentives of teaching performance, as identified in the literature (Azumi & Lerman, 1987; Chapman, 1983; Cresap, McCormick, & Paget, Inc., 1984; Ellis, 1984; Freeman & Grant, 1987; Herzberg, Mausner, & Snyderman, 1959; Johnson, 1986; Lortie, 1975; Martinez-

Pons, 1990; Palaich & Flannelly, 1984), as personally motivating or unmotivating. They were asked to rate the items on a scale from 1 ("highly unmotivating") to 6 ("highly motivating"). The incentive variables, including the variable names appearing in parentheses, were:

- a one-time-only monetary award, supplemental to the step increase (***MONAWARD***);
- being selected as "Teacher of the Year" in the district (***TOFY***);
- an instructional workshop offered by the district for a fee (***WORKFEE***);
- having students thank a teacher for aiding in the understanding of a difficult concept (***STTHANKS***);
- an instructional workshop offered and paid for by the district (***WORKPAID***);
- being given the opportunity to participate in teacher projects, such as research or curriculum development (***PROJECTS***);
- early retirement/contract buy-out (***RETIRE***);
- observing vast improvement in the achievement levels of one's students since the beginning of the year (***IMPROVE***);
- being awarded a plaque by students (***PLAQUE***); and
- being permitted to purchase additional equipment and supplies for the classroom (***EQUIP***).

Results

Dimensionality of the Model

A correlation matrix was computed for the ten observed variables and was used as the input for the factor analytic procedure. The factor analytic procedure was conducted using SPSS (v. 6.0). In an attempt to determine the appropriate number of dimensions of the factor model, an initial principal components analysis was used to find the underlying dimensions, or linear combination of original variables, which explained the most variance in the original variables.

The initial number of factors to be identified was determined by using a default command setting within SPSS, which instructs the computer to extract the number of factors equal to the number of variables with initial eigenvalues greater than 1.00 (Kaiser's rule).

The principal components analysis resulted in three eigenvalues greater than 1.00. This 3-factor solution accounted for 42% of the variance in the original set of variables. It is important to note that a fourth eigenvalue was equal to .99. These results suggested that a 3- or 4-factor solution would be appropriate. The factor scree plot suggested a solution with 3, 4, or 5 factors. Finally, the test of model fit for the initial 3-factor model indicated that additional factors would better represent the "true" model ($\chi^2 = 33.17$, $p = .016$).

Since the χ^2 test of model fit indicated the need for additional factors and the scree plot suggested the possibility of 4 or 5 factors, the data were subjected to two additional factor analyses, one extracting 4 factors and the other extracting 5.

Information concerning the dimensionality and adequacy of model fit for the 3-, 4-, and 5-factor solutions are summarized in Table 1. This information includes the amount of variance explained by the model, the adequacy of fit (i.e., the number of residuals) between the reproduced correlations (those logically implied by the solutions) and the observed correlations, and the level of significance (*p*-value) for the test of model fit.

Insert Table 1 about here

In addition to the information provided in Table 1, it is important to note that half (5 out of 10) of the variables in the 3-factor model had communalities (the proportion of variance of the original variables explained by the model) less than .40; the 4-factor model had three variables with communalities less than .40; the 5-factor model had two.

Two of the ten residuals identified in the 3-factor model as being greater than .05 were fairly large (absolute values approaching .20). In the 4-factor model, five of the seven identified residuals were quite small (absolute values between .05 and .07), with the largest being less than .10. The one residual identified in the 5-factor model was quite small (.056).

In attempting to find the most parsimonious solution, it was determined that the 4-factor solution was the most appropriate. This solution explained more than half (53%) of the variance in the model. The tests of model fit for both the 4- and 5-factor

model resulted in "Fail to Reject" decisions, indicating that both models are adequately representative of the "true" model with respect to the observed correlations and variances. Although there were seven residuals larger than .05 in the 4-factor model, five of these were quite small. Finally, after rotation in the 5-factor model, it was apparent to the researcher that the addition of the fifth factor did not make a meaningful contribution to the parsimony of the solution – i.e., conceptually labeling the factors. This fifth factor corresponded to only one of the original variables. For these reasons, it was concluded that the 4-factor model was the most appropriate solution.

Interpretation of the Factors

The method used for factor extraction was a maximum likelihood procedure. The researcher experienced some difficulty when attempting to attach conceptual labels to the factors of the 4-factor model. In an attempt to improve the interpretation of the factors, the 4-factor model was subjected to both orthogonal (VARIMAX) and oblique (OBLIMIN) factor rotations. It was initially assumed by the researcher that the factors would be correlated due to the related aspects of the ten items. However, examination of the factor correlations resulting from the oblique rotation revealed the majority of these correlations to be quite small. Four of the six correlations were less than .15; the remaining two were .31 and .38. Therefore, the factor loadings resulting from the orthogonal factor rotation were used to provide clarity in the interpretations of factors.

The rotated factor loadings of the 4-factor model are shown in Table 2. Based on these factor loadings, conceptual labels were attached to the factors. The variables

which loaded on Factor 1 – ***IMPROVE*** (.986), ***STTHANKS*** (.613), and ***EQUIP*** (.508) – deal with student-teacher interactions, resulting in intrinsic types of rewards, within a classroom setting. Respectively, these address improvement in academic performance, student appreciation for a teacher's assistance, and additional classroom equipment and supplies. It is therefore hypothesized that one factor affecting teachers' ratings of these incentive variables is that of ***student-centered rewards***.

Insert Table 2 about here

The variables which loaded primarily on Factor 2 – ***WORKPAID*** (.601), ***WORKFEE*** (.578), and ***PROJECTS*** (.560) – deal with inservice training or other opportunities for professional development. It is therefore hypothesized that a second factor affecting teachers' ratings of these incentive variables is that of ***professional development incentives***.

The variables which loaded primarily on Factor 3 – ***PLAQUE*** (.835) and ***TOFY*** (.511) – deal with concrete, extrinsic rewards. Specifically, these included an award which could be displayed and a "title" which would bring some degree of notoriety within the school or community-at-large. It is therefore hypothesized that a third factor affecting teachers' ratings of these incentive variables is that of ***school district recognition awards***.

Finally, the variables which loaded primarily on Factor 4—***MONAWARD*** (.934) and ***RETIRE*** (.236)—deal with financial compensation beyond teachers' salaries. Both could be considered cash awards. It is therefore hypothesized that a fourth factor affecting teachers' ratings of these incentive variables is that of ***financial compensation***.

There is some concern on the part of the researcher that the variable ***RETIRE*** may not be consistent with the other nine incentive variables included in this study, at least as they were viewed by this particular sample of teachers. The largest rotated loading was equal to .236 on the financial compensation factor. The other three loadings were quite small. Additionally, the proportion of variability in ***RETIRE*** explained by the final model was extremely small (.066). There may be some question as to whether teachers view early retirement or contract buy-outs as a form of incentive for good teaching performance.

Discussion

There exists no "absolute" classification scheme for the purposes of categorizing teaching performance incentives. Commonly employed dichotomous (and in some cases "*tri*chotomous") schemes have been utilized in an attempt to facilitate discussion as well as debate of this particular topic. However, for the most part, these have not been derived from an empirical base. These previously existing schemes were likely derived as a result of a *logical*—and perhaps somewhat subjective—approach to the classification of incentives.

A problem fundamental to these logically-deduced schemes are the nuances evoked when the terms "intrinsic" and "extrinsic" are used to describe performance incentives. Intrinsic rewards are inherently good; that is, they are rewards experienced by individuals as a result of having performed a task successfully. The reward itself is an internalized feeling of success and self-worth. Teachers often cite this notion as being the primary motivating factor for their initial entry into the teaching profession. In contrast, extrinsic rewards are inherently bad[1]; that is, they are concrete incentives. They are rewards that can be touched, that can be seen, and in many cases that can spent! Placing value on extrinsic rewards seems to imply that an individual is performing the work for the wrong reasons—those in the form of some type of monetary gain.

The classification scheme resulting from this study serves as an alternative to the previously discussed schema. This alternative classification system is important for two essential reasons. First of all, it is empirically-based, resulting from the ratings provided by nearly 130 K-12 teachers. This provides a distinct advantage over the logically-based classification schemes which have historically been utilized. Secondly, it provides an alternative structure to the "intrinsic—extrinsic," "good—bad" schemes of the past. That is not meant to imply that some qualitative adjectives could not be applied to the resulting 4-category scheme (i.e., student-centered rewards, professional development incentives, school district recognition awards, and financial compensation), because that

[1] For lack of a better term, "bad" is used simply to establish the bipolar nature of the classification scheme (intrinsic → good; extrinsic → bad). By no means is this meant to imply that those who are motivated by extrinsic rewards are "bad."

could certainly be done. However, the alternative classification scheme avoids the simple "either—or" dichotomy of the previous system.

The results of this study have important implications for educators as well as researchers. The 4-category classification of incentives provides an option to administrators and teachers in terms of discussing and ultimately designing a system of performance incentives. Avoiding the "intrinsic—extrinsic," "good—bad" systems of the past may provide teachers with what they might see as greater opportunities for rewards related to their teaching performance. At a minimum, the alternative system should provide a basis for discussing new or different types of incentives that could be offered to teachers.

Additionally, the 4-category classification system provides researchers with an alternate means of analyzing and discussing teaching performance incentive systems. It is recommended that further research be conducted on this classification system in order to determine (1) the reliability of the 4 factors using different and/or larger target populations and appropriate, representative samples; and (2) establish the true—or, at least, the perceived—effectiveness of this new classification system for inservice teachers and administrators.

References

Azumi, J. E., & Lerman, J. L. (1987). Selecting and rewarding master teachers: What teachers in one district think. The Elementary School Journal, 88(2), 189-202.

Chapman, D. W. (1983). Career satisfaction of teachers. Educational Research Quarterly, 7(3), 40-50.

Cresap, McCormick, & Paget, Inc. (1984). Teacher incentives: A tool for effective management. Washington, D.C.: National Association of Secondary School Principles. (ERIC Document Reproduction Service No. ED 244 388)

Dinham, S. & Scott, C. (1997). Modeling teacher satisfaction: Findings from 892 teaching staff at 71 schools. Paper presented at the annual meeting of the American Educational Research Association, Chicago, Illinois. (ERIC Document Reproduction Service No. ED 408 247)

Ellis, T. I. (1984). Motivating teachers for excellence. (ERIC Clearinghouse on Educational Management: ERIC Digest No. 6). Eugene, OR: ERIC Clearinghouse on Educational Management. (ERIC Document Reproduction Service No. ED 239 449)

Fox, W. M. (1986.) Teacher motivation. Paper presented at the annual meeting of the National Council of States on Inservice Education. (ERIC Document Reproduction Service No. ED 275 677)

Frataccia, E.V. & Hennington, I. (1982, February). Satisfaction of hygiene and motivation needs of teachers who resigned from teaching. Paper presented at the Annual Meeting of the Southwest Educational Research Association, Austin, TX. (ERIC Document Reproduction Service No. ED 212 612)

Freeman, R. R., & Grant, F. D. (1987). How we increased staff attendance by 16 percent and saved $156,000. The American School Board Journal, 174(2), 31

Galloway, D., Boswell, K., Panckhurst, F., Boswell, C., & Green, K. (1985). Sources of satisfaction and dissatisfaction for New Zealand primary school teachers. Educational Research, 27(1), 44-51.

Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). The motivation to work (2nd ed.). New York: John Wiley & Sons.

Johns, H. E. (1988). Faculty perceptions of a teacher career ladder program. Contemporary Education, 59(4), 198-203.

Johnson, S. M. (1986). Incentives for teachers: What motivates, what matters. Educational Administration Quarterly, 22(3), 54-79.

Lortie, D. C. (1975). Schoolteacher: A sociological study. Chicago: University of Chicago Press.

Martinez-Pons, M. (1990). Test of a three-factor model of teacher commitment. Paper presented at the Annual Meeting of the New England Educational Research Organization, Maine. (ERIC Document Reproduction Service No. ED 328 546)

Mertler, C. A. (1992.) Teacher motivation and job satisfaction of public school teachers. Unpublished masters thesis, Ohio State University.

Oliver, B., Bibik, J. M., Chandler, T. J. L., & Lane, S. L. (1988). Teacher development and job incentives: A psychological view. Journal of Teaching in Physical Education, 7(2), 121-131.

Ozcan, M. (1996). Improving teacher performance: Toward a theory of teacher motivation. Paper presented at the annual meeting of the American Educational Research Association, New York. (ERIC Document Reproduction Service No. ED 398 637)

Palaich, R., & Flannelly, E. (1984). Incentives: Improving teacher quality through incentives (Report No. TQ84-3). Denver, CO: Education Commission of the States. (ERIC Document Reproduction Service No. ED 272 484)

Sweeney, J. (1981). Professional discretion and teacher satisfaction. The High School Journal, 65(1), 1-6.

Turner, R. (1986, September). Teachers speak out about their evaluations. Learning, 58-67.

Table 1

Summary of Model Dimensionality and Adequacy of Model Fit for 3-, 4-, and 5-Factor Solutions

Number of Factors	Explained Variance	Number of Residuals > .05	*P*-Value for χ^2 Model Fit Test
3	42%	10 (22%)	.016
4	53%	7 (15%)	.275
5	60%	1 (2%)	.460

Table 2

Rotated factor loadings for the 4-factor model

Variable	Factors			
	F_1	F_2	F_3	F_4
IMPROVE	.986	-.023	.035	.158
STTHANKS	.613	.089	.210	.065
EQUIP	.508	.165	.114	-.026
WORKPAID	.174	.601	.169	-.081
WORKFEE	-.036	.578	-.023	.093
PROJECTS	.376	.560	.182	-.172
PLAQUE	.262	.012	.835	.080
TOFY	.093	.385	.511	.123
MONAWARD	-.036	.292	.200	.934
RETIRE	.056	-.086	.002	.236